be used in combination in order to accommodate requirements for larger bandwidth emissions, in accordance with this paragraph. Interoperability channels may not be combined with channels in another group except for channels for secondary trunking channels.

(1) *Narrowband.* Subject to compliance with the spectrum usage efficiency requirements set forth in §90.535, two or four contiguous narrowband (6.25 kHz) channels may be used in combination as 12.5 kHz or 25 kHz channels, respectively. The lower (in frequency) channel for two channel combinations must be an odd (*i.e.*, 1, 3, 5 * * *) numbered channel. The lowest (in frequency) channel for four channel combinations must be a channel whose number is equal to 1+(4xn), where n = any integer between 0 and 479, inclusive (*e.g.*, channel number 1, 5, * * * 1917). Channel combinations are designated by the lowest and highest channel numbers separated by a hyphen, *e.g.*, ''1–2'' for a two channel combination and ''1–4'' for a four channel combination.

(2) *Wideband.* Two or three contiguous wideband (50 kHz) channels may be used in combination as 100 kHz or 150 kHz channels, respectively. The lower (in frequency) channel for two channel combinations must be a channel whose number is equal to 1+(3xn) or 2+(3xn), where n = any integer between 0 and 79, inclusive (*e.g.*, channel number 1, 2, 4, 5, 7, 8, * * * 238, 239). The lowest (in frequency) channel for three channel combinations must be a channel whose number is equal to 1+(3xn), where n = any integer between 0 and 79, inclusive (*e.g.*, channel number 1, 4, 7, 10, * * * 238). Channel combinations are designated by the lowest and highest channel numbers separated by a hyphen, *e.g.*, ''1–2'' for a two channel combination and ''1–3'' for a three channel combination.

(e) *Channel pairing.* In general, channels must be planned and assigned in base/mobile pairs that are separated by 30 MHz. However, until December 31, 2006, channels other than those listed in paragraphs (b)(1) and (c)(1), may be planned and assigned in base/mobile pairs having a different separation, where necessary because 30 MHz base/mobile pairing is precluded by the presence of one or more co-channel or adjacent channel TV/DTV broadcast stations.

[63 FR 58651, Nov. 2, 1998, as amended at 65 FR 66654, Nov. 7, 2000; 66 FR 10635, 10636, Feb. 16, 2001; 67 FR 61005, Sept. 27, 2002; 67 FR 76700, Dec. 13, 2002]

EFFECTIVE DATE NOTE: At 72 FR 48860, Aug. 24, 2007, §90.531 was amended by revising the introductory text, paragraphs (a) and (e) and the introductory text and table to paragraph (b), removing paragraphs (c) and (d)(2) and adding paragraphs (f) and (g) effective October 23, 2007. For the convenience of the user, the added and revised text is set forth as follows:

§90.531 Band plan.

This section sets forth the band plan for the 763–775 MHz and 793–805 MHz public safety bands.

(a) *Base and mobile use.* The 763–775 MHz band may be used for base, mobile or fixed (repeater) transmissions. The 793–805 MHz band may be used only for mobile or fixed (control) transmissions.

(b) *Narrowband segments.* There are two band segments that are designated for use with narrowband emissions. Each of these narrowband segments is divided into 960 channels having a channel size of 6.25 kHz as follows:

Frequency range	Channel Nos.
769–775 MHz	1–960
799–805 MHz	961–1920

* * * * *

(f) *Internal guard band.* The internal guard band (768–769/798–799 MHz) is reserved.

(g) *Broadband.* The 763–768 MHz and 793–798 MHz bands are allocated for broadband communications pursuant to the Public Safety Broadband License.

§90.533 Transmitting sites near the U.S./Canada or U.S./Mexico border.

This section applies to each license to operate one or more public safety transmitters in the 764–776 MHz and 794–806 MHz bands, at a location or locations North of Line A (see §90.7) or within 120 kilometers (75 miles) of the U.S.-Mexico border, until such time as agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, become effective governing border area non-broadcast

use of these bands. Public safety licenses are granted subject to the following conditions:

(a) Public safety transmitters operating in the 764–776 MHz and 794–806 MHz bands must conform to the limitations on interference to Canadian television stations contained in agreement(s) between the United States and Canada for use of television channels in the border area.

(b) Public safety facilities must accept any interference that may be caused by operations of UHF television broadcast transmitters in Canada and Mexico.

(c) Conditions may be added during the term of the license, if required by the terms of international agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, regarding non-broadcast use of the 764–776 MHz and 794–806 MHz bands.

[43 FR 54791, Nov. 22, 1978, as amended at 67 FR 76700, Dec. 13, 2002]

EFFECTIVE DATE NOTE: At 72 FR 48861, Aug. 24, 2007, §90.533 was amended by revising the introductory text and paragraphs (a) and (c), effective October 23, 2007. For the convenience of the user, the revised text is set forth as follows:

§90.533 Transmitting sites near the U.S./Canada or U.S./Mexico border.

This section applies to each license to operate one or more public safety transmitters in the 763–775 MHz and 793–805 MHz bands, at a location or locations North of Line A (*see* §90.7) or within 120 kilometers (75 miles) of the U.S.-Mexico border, until such time as agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, become effective governing border area non-broadcast use of these bands. Public safety licenses are granted subject to the following conditions:

(a) Public safety transmitters operating in the 763–775 MHz and 793–805 MHz bands must conform to the limitations on interference to Canadian television stations contained in agreement(s) between the United States and Canada for use of television channels in the border area.

* * * * *

(c) Conditions may be added during the term of the license, if required by the terms of international agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, regarding non-broadcast use of the 763–775 MHz and 793–805 MHz bands.

§90.535 Modulation and spectrum usage efficiency requirements.

Transmitters designed to operate in 764–776 MHz and 794–806 MHz frequency bands must meet the following modulation standards:

(a) All transmitters in the 764–776 MHz and 794–806 MHz frequency bands must use digital modulation. Mobile and portable transmitters may have analog modulation capability only as a secondary mode in addition to its primary digital mode. Mobile and portable transmitters that only operate on the low power channels designated in §§90.531(b)(3), 90.531(b)(4), are exempt from this digital modulation requirement.

(b) Transmitters designed to operate in the narrowband segment using digital modulation must be capable of maintaining a minimum data (non-voice) rate of 4.8 kbps per 6.25 kHz of bandwidth.

(c) Transmitters designed to operate in the wideband segment using digital modulation must be capable of maintaining a minimum data (non-voice) rate of 384 kbps per 150 kHz of bandwidth.

(d) The following provisions apply to licensees operating in the channels designated in §§90.531(b)(5) or 90.531(b)(6).

(1) With the exception of licensees designated in paragraph (d)(2) of this section, after December 31, 2014, licensees may only operate in voice mode in these channels at a voice efficiency of at least one voice path per 6.25 kHz of spectrum bandwidth.

(2) Licensees authorized to operate systems in the voice mode on these channels from applications filed on or before December 31, 2014, may continue operating in voice mode on these channels (including modification applications of such licenses granted after December 31, 2014, for expansion or maintenance of such systems) at a voice efficiency of at least one voice path per